Summary of Oxydiesel™ technology

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Background

AAE Technologies, Inc. (AAE) is the U.S. subsidiary of AAE Holdings plc, a fuel additive development company based in the United Kingdom. AAE has developed a line of proprietary additive products designed to improve the performance of ethanol and other oxygenated fuels in various petroleum-based liquid transportation fuels. These products include Reformulated Ethanol™ and OxyDiesel™, both of which enable ethanol to be more cost-effectively blended with gasoline and diesel to achieve substantial emissions reductions benefits with no logistical concerns about blending, storage, and handling.

OxyDiesel™, a fuel product extensively tested in Europe, Brazil, and most recently here in the United States, is a blend typically of 7.7vol% ethanol + up to about 1.0vol% AAE proprietary additive + cetane improver and conventional or ultra low sulfur diesel. The AAE additive creates a fully solubilized microemulsion of ethanol and diesel that is stable at all temperatures and in the presence of water. The following briefly addresses technical and performance results achieved to date, which are summarized in more detail in AAE's CD-ROM brochure or on its website: www.aaetech.com.

Emissions Benefits

Testing conducted since 1997 at well-known emissions testing facilities in Europe and Brazil indicated that OxyDiesel™ reduces emissions of particulate matter (PM), nitrogen oxides (NOx), carbon monoxide (CO), and visible smoke from unmodified compression-ignition (CI) engines. AAE has undertaken an extensive battery of tests at the EPA- and CARB-certified engine test laboratory at the Colorado School of Mines (CSM) starting in mid-1999 in a 1991 Detroit Diesel Series 60 engine which is used for fuel certification in California.

Test results at CSM using the standard EPA and CARB 13-mode heavy-duty transient test showed that OxyDiesel™ reduced NOx by 3 - 5%, PM by 33% or more, and CO by 23% or higher, compared to conventional low sulfur diesel. Additional testing has been undertaken to determine whether additional NOx and other emissions reductions can be obtained.

Based upon this performance, in 2000 the Clark County (Las Vegas), NV Department of Health recommended that OxyDiesel™ be included among a range of clean fuel and vehicle programs eligible for fleets to earn emissions credits, as part of an area-wide air quality improvement strategy. This is the first program of its kind in the country.

Engine Efficiency/Performance

Many hundreds of thousands of miles of fleet testing on OxyDiesel™ are being successfully demonstrated in Europe (Ireland), Brazil, and the United States (Las Vegas, Illinois, Nebraska, New York City). Other fleet demonstration testing on a range of vehicles is anticipated in 2001 in Texas, California, Colorado, and Arizona.

The results of AAE's fleet testing to date have indicated that its OxyDiesel™ fuel does not adversely affect fuel efficiency and vehicle mileage to any degree when compared to the performance of "typical" low sulfur diesel.

Engine Compatibility

In March, 2000, AAE completed a 500-hr. engine durability test at Emission Testing Services (ETS), an independent, CARB-certified engine test lab in Costa Mesa, CA. This is an important test for original equipment manufacturers (OEMs) which require such data to determine the compatibility and

durability of fuels in a given engine under heavy load conditions. OxyDiesel™ was tested in a Cummins NTC-350 heavy-duty engine under these standard test procedures.

The results of this testing which were determined by measurements conducted by ETS and a Cummins authorized maintenance facility which found that all fuel pumps, injectors, rods & bearings, and other components were "normal" and "no excessive wear found" relative to the expected results using conventional low sulfur diesel fuel.

Cost Analysis
Based upon current US diesel fuel economics, the relative simplicity of blending OxyDiesel™ (similar to ethanol-gasoline storage, blending, and handling), and the fact that the AAE additive components are not in full production, AAE estimates that OxyDiesel™ will cost about 3 - 6 cents more per gallon than "rack" diesel. This cost is also dependent upon whether OxyDiesel™ is used in on- or off-road equipment. Given OxyDiesel™'s improved lubricity, lower emissions, and other characteristics, it is considered a "premium" diesel fuel.

Fuel Availability & Supply
AAE has secured international production and supply agreements with world-scale manufacturers of the key additive components used to formulate its patented product. As such, AAE is able to meet any anticipated demand for OxyDiesel™ in the United States and other world markets. Once production is fully underway to meet that demand, it is anticipated that the additive's price will fall accordingly.

In Fall, 2000, AAE has also entered into an exclusive OxyDiesel™ strategic marketing agreement for North America with Octel-Starreon, LLC, the largest independent motor fuel additive supplier in the United States.

AAE is prepared to back up all of the above claims and findings with the laboratory results that have been obtained to date. AAE is fully committed to continuing testing to address the real issues and questions being raised by OEMs, fleet operators, and regulators regarding OxyDiesel™ performance, economics, and regulatory compliance.